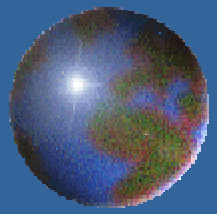


Developing an Environmental Management System for NIEHS

Town Meeting and Discussion

Earth Day, 2004

Topics

- Introduction – What Is An EMS ?
- What Aspects of NIEHS Can Impact the Environment ?
- Can We Set Objectives and Targets to Improve Environmental Performance ?
- Summary – What's Next ?

We Need Your Ideas & Suggestions

What Is An EMS ?

- An EMS is a formal documented system that ensures environmental issues are considered ***at all levels*** throughout the NIEHS.
- Drawing upon existing NIEHS environmental management programs, the EMS ***systematically*** addresses the variety of activities at the NIEHS that impact our environment.

"Islands of Excellence"

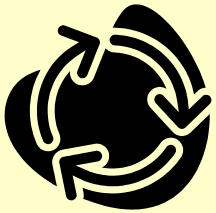
- Recycling
- Resource / Energy Conservation
- Hazardous Waste Management
- Wastewater Pollution Prevention
- Air Emissions
- Grounds Maintenance

Integrated Programs

Recycling

Resource / Energy Conservation

E M S



Hazardous Waste Management

Wastewater Pollution Prevention

Air Emissions

Grounds Maintenance

Why Should We Have An EMS ?

- It supports our mission
- An EMS will enhance the Institute's proactive approach for environmental stewardship
- Better to manage ***how we interact*** with the environment, than deal with ***what we have done*** to the environment
- Because we have to . . .

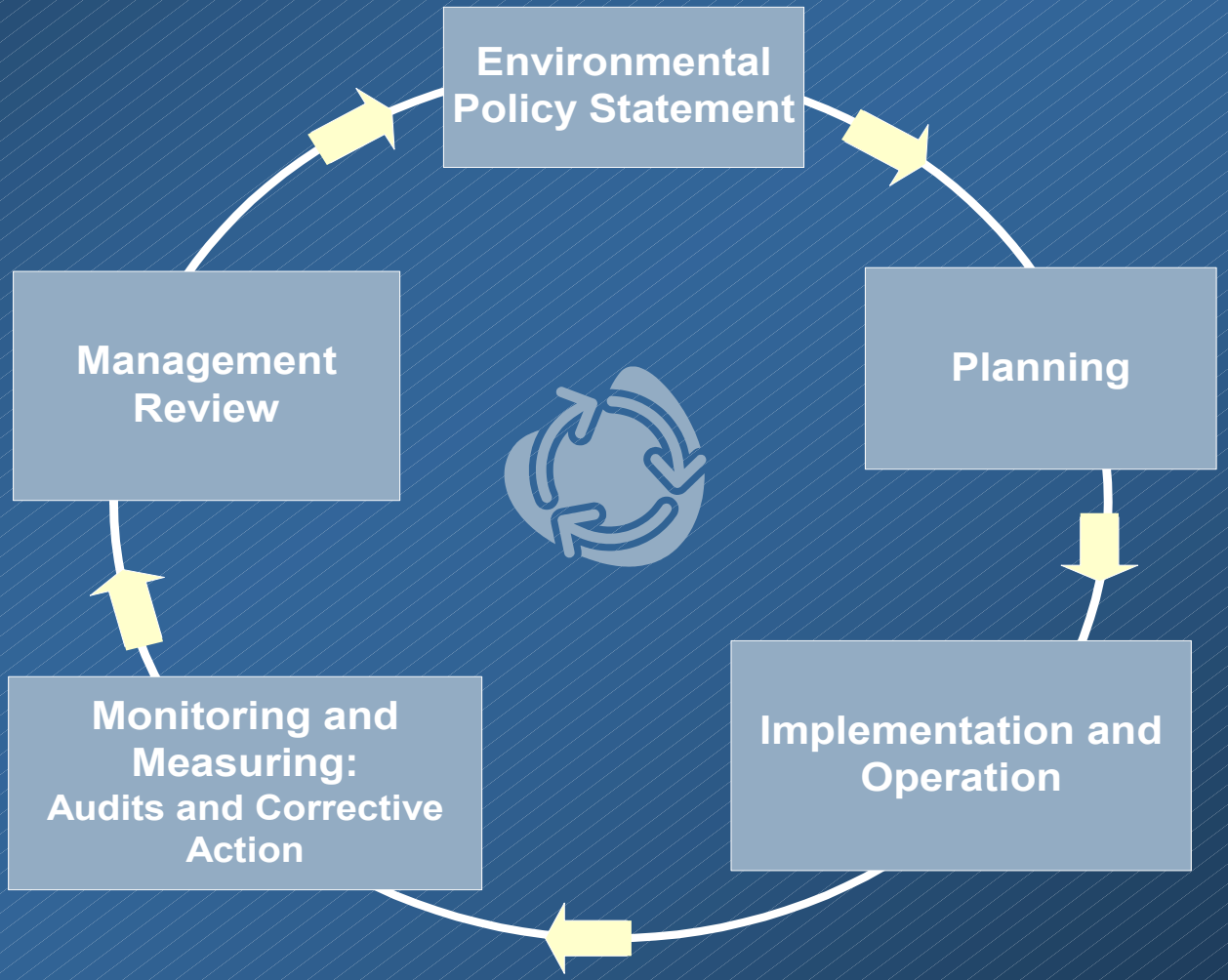
- **Executive Order 13148 --** *Greening the Government Through Leadership in Environmental Management*
  - Requires an effective EMS by December 31, 2005.
- **OMB Circular A-11** (The Budget Process)

  "Federal agencies should develop and implement an EMS in order to integrate environmental accountability into day to day decision making and long term planning across all agency missions.."

- **Federal Environmental Executive**
  - EMS Self Declaration Protocol (1/27/2004)

    "The protocol establishes the framework to be used by each agency in formulating the process and guidance for its facilities to self-declare compliance with the EMS requirements of the [Executive] Order."
  - Protocol must be implemented by December 31, 2004
- **ISO 14001 Standards**
  - Developed in 1996 by International Organization for Standardization

EMS Process


Environmental Policy Statement
Planning
Implementation and Operation
Monitoring and Measuring:
Audits and Corrective Action
Management Review

EMS Process

- ✓ Establish a *Policy Statement* that is tied to the NIEHS Mission
- ✓ Identify the *Aspects* of our operations that impact the environment
- Assess which Aspects have significant *Impacts*
- Develop O*bjectives* and *Targets*
- Track and document performance
- Review / Adjust (Continual Improvement Process)

ENVIRONMENTAL POLICY STATEMENT
FOR THE
NATIONAL INSTITUTE OF ENVIRONMENTAL HEALTH SCIENCES

I. Purpose and Policy.

Purpose: This policy establishes general goals and guiding principles for a commitment to environmental responsibility. Through implementation of this policy, the NIEHS will strive to be a leader in the advancement of environmental stewardship within our programs, facilities, and the community.

Policy: The NIEHS mission is to reduce the burden of environmentally associated disease and dysfunction by defining how environmental exposures affect our health, how individuals differ in their susceptibility to these exposures, and how these susceptibilities change over time. In keeping with this mission and to preserve the rights of future generations, the Institute affirms its commitment to environmental excellence and actively promotes the public's right to a healthy, quality environment. The NIEHS will strive to integrate environmental responsibility in its decision-making at all levels and in the conduct of all Institute programs and practices.

II. General Goals and Guiding Principles.

A. *Compliance with Environmental Requirements.* The NIEHS is committed to complying with all applicable Federal, state and local environmental laws, statutes and regulations. Where existing laws and regulations are not adequate to ensure protection of public health or the environment, we will establish and meet our own environmental quality standards.

B. *Environmentally Responsible Planning and Design Principles.* The NIEHS will assess the environmental implications in the development, construction, and operation of campus infrastructure, grounds, and buildings. To the extent practical, planning and designs for the maintenance and development of campus facilities will promote environmental sustainability through the efficient use and conservation of resources, landscaping and grounds maintenance practices that are compatible with the local environment, and modes of transportation that minimize environmental impact.

C. *Pollution Prevention.* The NIEHS will minimize solid waste generation and the potential release of pollutants into the environment first through source reduction, secondarily through reuse and recycling, and finally through treatment and disposal.

D. *Hazardous Waste and Toxic Materials.* The NIEHS will actively strive to minimize the generation of hazardous wastes. The Institute will maintain policies and processes for the safe and efficient use, tracking, storage, and disposal of hazardous and toxic materials.

E. *Commitment to Environmental Education and Awareness.* The NIEHS recognizes the value of on-going education and awareness of all employees and on-site contractors concerning the importance of environmental responsibility in all phases of Institute operations. Further, the Institute is committed to provide relevant and accurate information on the Institute's environmental performance to the public.

F. *Environmentally Responsible Purchasing Decisions.* The NIEHS recognizes that environmental responsibility can be exercised through its purchasing choices. Accordingly, the Institute will strive to obtain the "best value" by balancing short and long-term costs, including consideration of the environmental, life cycle, and maintenance costs in purchasing products and services.

G. *Efficient Use and Conservation of Energy, Water, and Other Resources.* The NIEHS will strive to reduce resource consumption by eliminating wasteful practices and promoting efficient use, and by evaluating and implementing feasible and practical conservation measures in existing buildings, renovations, and new construction.

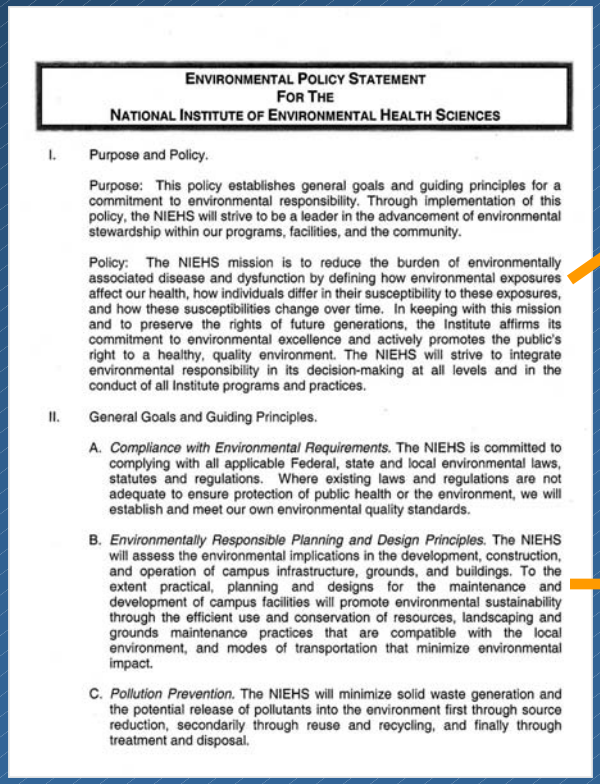
III. Implementation and Review

The Office of Management, through its Health and Safety and Facilities Engineering Branches, shall be responsible for administering and monitoring this policy through implementation of an Environmental Management System. All NIEHS employees and staff are expected to support the Institute's effort to meet the goals of this policy and are encouraged to offer comments and suggestions for improvement. The Health and Safety Branch will coordinate an annual review of this policy statement and develop recommendations for improvements and updates as needed.

APPROVED: Ken Olden, NIEHS Director

Date: 10-28-2003

NIEHS Environmental Policy



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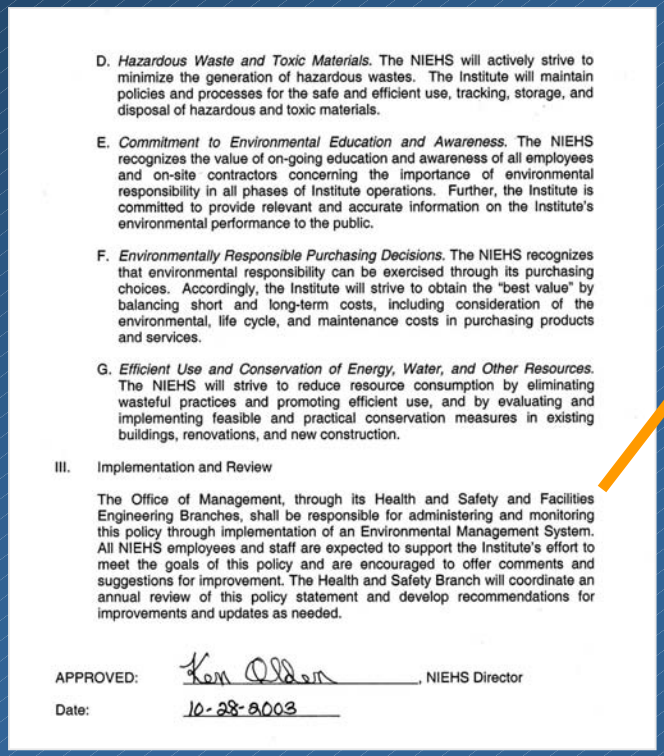
C. *Pollution Prevention.* The NIEHS will minimize solid waste generation and the potential release of pollutants into the environment first through source reduction, secondarily through reuse and recycling, and finally through treatment and disposal.

- Advances NIEHS leadership role and commitment to environmental responsibility and sustainability – consistent with our mission.
- Establishes 7 general goals and guiding principles

General Goals & Guiding Principles

- Compliance with Environmental Requirements
- Environmentally Responsible Planning and Design Principles
- Pollution Prevention
- Hazardous Waste and Toxic Materials
- Commitment to Environmental Education and Awareness
- Environmentally Responsible Purchasing Decisions
- Efficient Use and Conservation of Energy, Water, and Other Resources

NIEHS Environmental Policy



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- EMS implemented through a partnership effort of HSB and FEB
- ALL employees are involved

(Policy is part of the Health and Safety Manual – Chapter 6, Environmental Management)

http://www.niehs.nih.gov/odhsb/manual

Environmental Aspects and Impacts

- Environmental Aspects

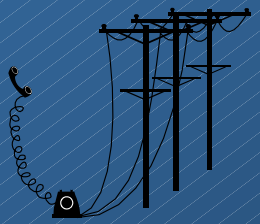
  Elements of an organization's activities, products or services which can interact with the environment. (For example: wastewater discharges, air emissions, resource consumption, energy usage, ecosystem alterations, etc.)

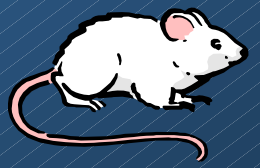
- Environmental Impacts

  Any change to the environment, whether adverse or beneficial, wholly or partly resulting from an organization's activities, products, or services (based on the aspects, for example: air emissions impacts the air by degrading the air quality).

Activities, Products and Services

- What do we do here at NIEHS?
  - Consider mission (what the facility is designed to do)
  - Consider activities that support the mission
  - Consider actions that are both regulated and not regulated





Examples of Activities, Products and Services at NIEHS

- Biomedical/Laboratory Research
- Animal Husbandry
- Building Maintenance
- Grounds Maintenance
- Building Utility Services
- Cafeteria Services
- Waste Management

Subdivision of Activities

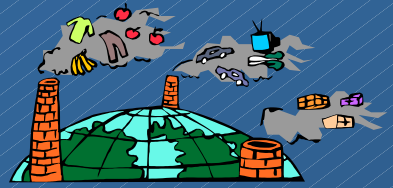
- Animal Husbandry
  - Animal bedding and feed systems
  - Cage wash operations
  - Veterinary care and animal facility operations
  - Necropsy
  - Pest Control

The Aspect/Impact Process

- List and characterize activities, products and services
- Identify aspects and impacts for each activity, product, or service

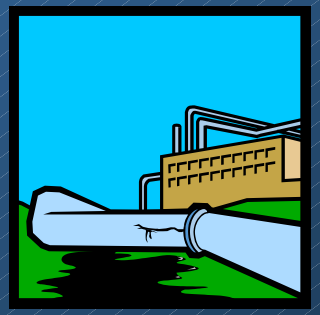
- Tap into your knowledge base!

Determine Significance



- Significance Equals

Frequency x [(Scope x Severity) + Probability + Legal Risk + Resource Consumption]



Examples of Potentially Significant Activities, Products, and Services

- Building Utility Services (Boilers)
- Facility Construction/Renovation (ACM Management)
- Biomedical Research (Bench Scale)
- Animal Husbandry (Cage Wash)
- Waste Management (Building 108)
- Building Maintenance (Janitorial/Custodial Services)
- Warehousing (Transportation)
- Grounds Maintenance (Lawn Maintenance)

EMS Objectives And Targets

- Address Identified Significant Aspects
  - The goal of establishing EMS objectives and targets is to reduce the environmental impact caused by identified significant aspects

Evaluate Limitations

- **Legal**
  - Review environmental permits, regulations, compliance
- **Technical**
  - What options are available? Are they feasible?
- **Financial**
  - How much will it cost? Is the benefit worth the cost?
- **Unique Research Facility Challenges**
  - Non-production facility, NIEHS produces knowledge
  - Research is dynamic, unlike traditional manufacturing processes
- **Existing Environmental Programs**
  - Is the impact of the aspect already controlled by an existing program? If so, document existing controls and efforts

Defining Objectives And Targets

- Can We Set Objectives And Targets To Improve Environmental Performance?
  - **Objective** – An overall goal that reflects the environmental policy statement, and is developed to reduce the environmental impact caused by identified significant aspects.
  - **Target** – A detailed measurable performance metric related to the objective

NIEHS Facility Wide Example

- **Objective** – Reduce petroleum fuel usage by NIEHS fleet vehicles

- **Target** – Achieve 20% reduction in petroleum fuel usage rate, over 1999 baseline, by December 31, 2005

Energy Conservation Example

- **Objective** – Increase energy efficiency at the central utility plant
- **Target** – Replace two older boilers with one high efficiency, low NOx boiler

Research Laboratory Example

- **Objective** – Reduce potential for mercury releases into the sanitary sewer system
- **Target** – Remove, sample, and properly dispose of all sink traps located in laboratories slated for renovation

Research Laboratory Example

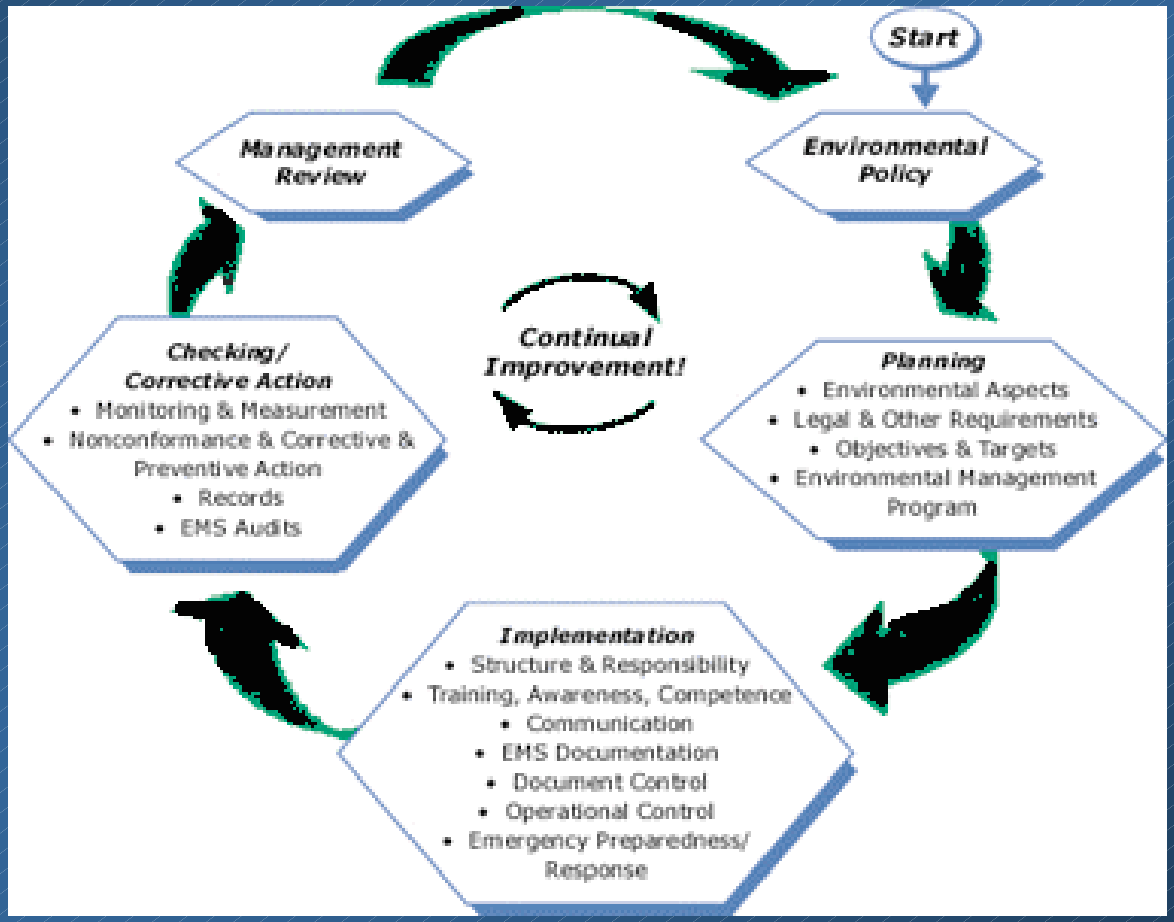
- **Objective** – Recover and reuse chemicals from the NIEHS research labs
- **Current Target** – Reuse 100% of ethanol recovered from all histology labs (Currently reuse about 50% of the recovered ethanol onsite with the remainder going offsite for fuels blending)

- **EMS Objective** – Increase onsite ethanol reuse (to reduce costs associated with offsite disposal, hazardous waste permitting, and purchasing new chemicals)
- **EMS Target** – Increase onsite ethanol reuse to 70% by December 31, 2005 and 85% by December 31, 2006 with the remainder going offsite for fuels blending

Establishing Objectives & Targets

- Environmental Policy Statement
  - Review 7 general goals and guiding principles
- Evaluate Limitations
  - Legal, technical, financial, research facility, existing programs
- Propose Objectives & Targets
  - To reduce environmental impact of significant aspects
- EMS Team Approach
  - Invite other interested and knowledgeable parties to comment on proposed objectives & targets
- Facility Commitment
  - Obtain management approval and commitment for recommended objectives & targets

How it all fits together



EMS Model
U.S.E.P.A.

Possible Challenges

- Developing EMS Metrics for Research Environment
- Incorporating into Existing Practices
- Managing Aspects, Impacts, Objectives and Targets
- Accountability for goals

Potential Benefits

- Reduced Environmental Impact
- Reduced Energy Use
- Reduced Waste
- Increased Safety
- Written Procedures and Process Consistency
- Prestige and Enhanced Image

EMS Examples

- NASA Stennis Space Center
  - Developed useful "lesson's learned" component that NIEHS can utilize.
- EPA Environmental Science Center- Ft. Meade
  - Had to devote a large budget to EMS development. Large funding not necessary for NIEHS since many essential elements and documentation are already in place.
- CDC
  - Has workplace most similar to NIEHS. CDC focused on waste and pollution reduction and minimize impacts from construction and development.

What's Next?

- Awareness and Training
  - -Ensures that everyone is capable of carrying out their environmental responsibilities.
- Work with Program Area Staff
  - -Requires employee participation to determine environmental aspects and develop objectives and targets.
- Management Support and Involvement
  - -Need team approach for success.

QUESTIONS ?

COMMENTS ?

SUGGESTIONS ?

IDEAS ?